

What is claimed is:

1. A vehicle air conditioner comprising:

a cooling heat exchanger for cooling air;

a heating heat exchanger for heating air;

a cooled air passage through which cooled air cooled by the cooling heat exchanger flows;

a heated air passage through which heated air heated by the heating heat exchanger flows;

an intersecting portion to which the cooled air passage and the heated air passage are connected;

a cylindrical rotary door provided at the intersecting portion having a plurality of openings and partition walls at its periphery; and

a plurality of blow-out openings provided at a downstream side with respect to the intersecting portion for blowing the conditioned air to a passenger compartment of the vehicle, wherein:

a communicating area ratio between an inlet-side opening among the plurality of openings and at least one of the cooled air passage and the heated air passage changes by a rotation of the rotary door so that the rotary door serves as an air mixing device, while a communicating area ratio between an outlet-side opening among the plurality of openings and at least one of the blow-out openings so that the rotary door serves as a mode switching door at the same time;

the rotary door has a rotated position where the

conditioned air is prevented from being blown out through the plurality of blow-out openings by the partition wall; and

the plurality of blow-out openings includes a face opening and a foot opening.

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2. A vehicle air conditioner according to claim 1, wherein:
said partition wall of the rotary door has at least one of a resin film-like member, a thin plate resin member and a thin plate metal member.

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3. A vehicle air conditioner according to claim 1, wherein:
said rotary door is made of a resin material or a metal material, and said rotary door has a sealing member to prevent the plurality of openings from communicating with the plurality of blow-out openings.

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4. A vehicle air conditioner according to claim 1, wherein:
said rotary door has a position where the partition wall shuts both the cooled air passage and the heated air passage provided at an upstream side of the intersecting portion.

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5. A vehicle air conditioner according to claim 1, wherein:
said rotary door has a position where the partition wall shuts the plurality of blow-out openings provided at the downstream side of the intersecting portion.

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6. A vehicle air conditioner according to claim 1, wherein:

said plurality of blown-out openings includes a rear seat face opening for blowing the conditioned air toward an upper body of a passenger seated in a rear seat, and a rear seat foot opening for blowing the conditioned air toward a foot portion of the passenger seated in the rear seat.

7. A vehicle air conditioner according to claim 6, wherein:
the face opening is arranged adjacent the foot opening in a circumferential direction of the cylindrical rotary door.

8. A vehicle air conditioner according to claim 6, wherein:
the face opening and the foot opening are arranged in a direction parallel to a central axis of the cylindrical rotary door so that the face opening and the foot opening are arranged at different positions along the central axis, respectively.

9. A vehicle air conditioner according to claim 8, wherein:
a rib is provided at an end of the inlet-side opening opposed to the rear seat face opening to reduce a communicating area defined by the inlet-side opening with said rib and an open end of the heated air passage.

10. A vehicle air conditioner according to claim 8, wherein:

a rib is provided at an end of the inlet-side opening opposed to the rear seat foot opening to reduce a communicating area defined by the inlet-side opening with said rib and an open

end of the cooled air passage.

11. A vehicle air conditioner according to claim 8,
wherein:

5 a rib is provided at a partitioning portion formed between
the cooled air passage opposed to the rear seat face opening and
the heated air passage opposed to the rear seat face opening,
and the rib reduces a communicating area between the inlet-side
opening and the heated air passage.

10 12. A vehicle air conditioner according to claim 8,
wherein:

15 a rib is provided at a partitioning portion formed between
the cooled air passage opposed to the rear seat foot opening and
the heated air passage opposed to the rear seat foot opening,
and the rib reduces a communicating area between the inlet-side
opening and the cooled air passage.

20 13. A vehicle air conditioner according to claim 1,
wherein:

25 said partitioning portion includes a longer arc defined
with one end of the inlet-side opening and one end of the
outlet-side opening, and a shorter arc defined with the other
end of the inlet-side opening and the other end of the outlet-side
opening, wherein:

the rotary door has a position where said longer arc
simultaneously closes both of the cooled air passage and heated

air passage or both of the face opening and foot opening.